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Temperament and Language Development in First Grade Children

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ABSTRACT

An abstract of the thesis of Loretta Marcia Kellogg for the Master of Science in Speech Communication: Speech and Hearing Science presented February 12, 1996.

Title: Temperament and Language Development in First Grade Children.

Many young children develop language over a broad range of ages yet present as having normal language development. When language development lags behind what is considered a normal time line, it is important to consider the various factors that may contribute to the delay in development.

The purpose of the current study was to examine various aspects of temperament among three groups of children with varying language histories. The specific question to be answered was, do significant differences occur on parent and clinician questionnaires of temperament among three groups of first grade children demonstrating varying levels of language development: those with normal language (NL), those with a history of expressive language delay (HELD), and those with chronic expressive language delay (ELD)?

Subjects for this study included 23 subjects in the NL

group, 22 subjects in the HELD group, and 6 subjects in the ELD group. The groups were compared utilizing the Temperament Assessment Battery for Children (TABC) on six variables of temperament on Parent Forms and five variables of temperament on Clinician Forms. The data were analyzed to see if significant differences existed among the language diagnostic groups. On the Parent Forms, a trend towards low approach/withdrawal characteristics was observed between the NL and ELD groups. On the Clinician Forms, a significant difference was observed on the variable, approach/withdrawal, between the NL group and HELD group. Both parametric and non-parametric analyses were in agreement on this finding.

The suggestion that low approach/withdrawal tendencies exist within late talking children may be the long term result of interaction between expressive language delayed children and the communication environment. These results must be viewed tentatively because the sample groups were of unequal numbers. If all diagnostic groups had been of equivalent size, the results may have been yielded stronger significance.

TEMPERAMENT AND LANGUAGE DEVELOPMENT

IN

FIRST GRADE CHILDREN

by

LORETTA MARCIA KELLOGG

A thesis submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE
in

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CHAPTER I

INTRODUCTION

As knowledge about language development and disorder grows, attempts are being made to identify variables that may predict normal or disordered development in young children with early delays. Current research continues to attempt to profile children with language disorders at various age levels in the hopes of identifying specific factors that may predict which children are at risk for chronic language disabilities. One of the variables to be considered is personality, or behavioral characteristics, also described as temperament. Does temperament affect outcome of early language delay?

The temperamental style of a child has the potential for significantly impacting his/her social interactions and, as a result, the types of language stimulation provided. If a child cries infrequently, smiles often, and adapts easily to new situations and people, there is a greater likelihood that people in the child's environment will engage in positive verbal exchanges with the child. Conversely, if the child cries often and reacts with withdrawal and fearfulness to new situations and people, parents and caretakers may be less inclined to provide positive language models. Thus, specific temperamental profiles may either enhance or hinder language development.

STATEMENT OF PURPOSE

The purpose of this study is to examine and compare parent and clinician reports of temperament characteristics of three groups of first grade children with varying language histories: those with normal language (NL), those considered late talkers (LT) as toddlers, but have achieved skills within the normal range by first grade (history of expressive language delay or HELD), and those who were LT as toddlers and continue to exhibit expressive language delay (ELD) at first grade.

Hypothesis

It is hypothesized that significant differences will occur on parent and clinician questionnaires of temperament among three groups of first grade children who demonstrate varying levels of language development; those with NL, those with HELD, and those with ELD.

Null Hypothesis

First grade children demonstrating varying levels of language development; those with NL, those with HELD, and those with ELD, will exhibit no significant differences on parent and clinician questionnaires of temperament.

DEFINITION OF TERMS

The following operational definitions were used for this study. Several of the definitions were taken directly from the Temperament Assessment Battery for Children (TABC) manual (Martin, 1988) which was the instrument used for this study.

Activity: The TABC manual (Martin, 1988) defines this variable as "the tendency to engage in gross motor movement, particularly vigorous, fast movement" (p. 18).

Adaptability: The TABC manual (Martin, 1988) defines this variable as "the ease and speed with which a child adjusts to new social situations" (p.18).

Approach/Withdrawal: The TABC manual (Martin, 1988) defines this variable as "the tendency to approach versus withdraw from new social situations" (p. 19).

Difficult Child: Thomas and Chess (1982) define the difficult child as one who is "characterized by irregularity in biological functions, a predominance of negative (withdrawal) responses to new stimuli, slowness in adapting to changes in environment, a relatively high frequency of expression of negative mood, and a predominance of high intensity in mood expression" (p. 4).

Distractibility: The TABC manual (Martin, 1988) defines this variable as "the ease with which the child's attention can be disrupted by environmental stimuli, particularly low level stimuli" (p. 19).

Ease-of-Manaqment Throuqh Distraction: The TABC manual (Martin, 1988) defines this variable as "the ease with which

a child can be distracted from inappropriate behavior toward appropriate behavior by an adult caretaker" (p.20).

Easy Child: Thomas and Chess (1977) define the easy child as one who demonstrates regularity, positive approach responses to new stimuli, high adaptability to change and mild or moderately intense mood which is mostly positive.

Emotional Intensity: The TABC manual (Martin, 1988) defines this variable as "the tendency to express emotions, particularly negative emotions (e.g., anger, frustration), with vigor" (p. 19).

Expressive Language Delay (ELD) Subjects: The subjects were considered to be in the ELD group if they had slow expressive language development at age 20-34 months, using the Language Developmental Survey (LDS) (Rescorla, 1989) criterion, and also received a score of less than 6.35 on the Development Sentence Scoring (Lee, 1974) at first grade.

History of Expressive Language Delay (HELD) Subjects: Children were identified as having a history of expressive language delay if they used less than 50 words on the Language Development Survey (Rescorla, 1989) and no two word combinations by the age of 20-34 months.

Late Talkers (LT) Subjects: The subjects were considered to be in the LT group if they were identified as late talkers at age 20-34 months by use of less than 50 words and no use of two word combinations using the LDS (Rescorla, 1989).

Normal Language (NL) Subjects: The subjects were considered to have normal language if they used more than 50

different words at age 20-34 months as reported by the parents on the LDS and also scored 6.35 or above on the DSS (Lee, 1974) at first grade.

Persistence: The TABC manual defines persistence as "attention span and the tendency to stick with difficult learning or performance situations" (Martin, 1988, p. 20).

Rhythmicity: Thomas and Chess (1977) define rhythmicity as "the predictability and/or unpredictability in time of any function. It can be analyzed in relation to the sleep-wake cycle, hunger, feeding pattern and elimination schedule" (p. 21).

Slow-to-Warm-up Child: Thomas and Chess (1977) define the slow-to-warm-up-child as one who demonstrates a combination of negative responses of mild intensity to new stimuli with slow adaptability after repeated contact.

Temperament: Temperament is defined by Webster's dictionary (1989) as "the characteristic physiological and emotional state of an individual, which tends to condition his responses to the various situations of life" (p. 1017).

Temperament Profile: A temperament profile is the result of scores on a temperament rating scale which may place a child in a category of Easy Child, Slow-to-Warm-up Child, or Difficult Child.

Trait: A trait is defined by Webster's dictionary (1989) as "a distinguishing characteristic, quality or feature" (p. 1047).

CHAPTER II

REVIEW OF THE LITERATURE

The explanation of exactly what determines or predicts a child's course of development has been under discussion for hundreds of years (Thomas & Chess, 1977). One of the variables under consideration is temperament and the role it plays in the overall development of an individual. More specifically, what role does temperament play in the development of language?

In the 1950s, there was a strong trend toward environmentalism as the most influential factor in shaping young lives (Thomas & Chess, 1977). It has been well documented that environment does indeed play a strong role in development (Bradley, 1993). However, some researchers believe the environment plays a very small role in approximately the first year, to year and a half of life (Thomas & Chess, 1977). Prior to the second year of life there are other factors involved in development which have come under investigation. Inherent individual differences have been observed by pediatricians in newborn infants that do not all respond the same way to the same environmental circumstances (Thomas & Chess, 1977). Some of those individual differences have come to be known as temperament (Thomas & Chess, 1977; Buss & Plomin, 1984; Bates, 1989).

TRAITS OF TEMPERAMENT

Temperament is not easily defined. It is generally regarded as a subclass of personality (Buss, 1991; Bates, 1989; Martin, 1988). However, Martin, (1988) suggests that temperament may be developmentally a more fundamental concept than personality because it focuses on behavioral differences seen at birth, thereby preceding personality which develops over time and experience. The preliminary features that lay the foundation for defining temperament are its apparent biological origin based on its early appearance in life and its stability over situations and time (Buss, 1991; Bates, 1989; Martin, 1988).

In the mid-1950s, Thomas & Chess conducted a study to examine the importance of constitutional differences within individual children, which when combined with environmental influences, seemed to explain and/or predict differences in development. These constitutional differences have been identified as temperament (Thomas & Chess, 1977).

According to Thomas & Chess (1977), temperament is viewed as the **how** of behavior, whereas ability is concerned with **what** and **how well** a behavior is manifested, and motivation accounts for **why** an individual is doing what he/she is doing. The notion that temperament is concerned with the **how** of behavior is generally accepted by those who study temperament (Martin, 1988; Thomas & Chess, 1977, Fullard et. al., 1984). In this light, temperament is described as behavioral style (Fullard et. al., 1984).

Behavioral style is **how** an individual responds to a particular stimulus.

Thomas and Chess (1977) felt it was very important to look at temperament as the interaction between the child's inherent abilities and motives and external environmental stresses and opportunities. They felt that the perception of a child as "easy" or "difficult", was based on the consonance or dissonance of the child's temperament interacting with his/her situational environment. If a child's temperament matches or is in consonance with his/her environmental demands, he/she is perceived as an easy child. Conversely, if the environmental interaction overwhelms the child's abilities to respond in a socially acceptable manner, he/she may be perceived as a difficult child. Hence, the temperament of the child is in dissonance or discord with the environment. Thomas and Chess (1977) theorize that perception of temperament is based on goodness of fit between the child's abilities and environmental demands.

The New York Longitudinal Study (NYLS) (Thomas & Chess, 1977) was designed to identify very specific aspects of temperament. This study followed a group of 141 children from 1956 to 1961. The data gathered for this study was obtained from quantitative and qualitative information about a child's behavior in various situations as obtained by parent interview. Follow-up data was provided by independent observers in the home and, in later years, by teachers. The information derived from this study identified the following nine aspects of temperament (Thomas & Chess, 1977, p. 21-22):

1. Activity level
2. Rhythmicity (regularity)
3. Approach or Withdrawal
4. Adaptability
5. Threshold of Responsiveness
6. Intensity of Reaction
7. Quality of Mood
8. Distractibility
9. Attention Span and Persistence

The results of this study yielded three distinct temperamental styles in children. The "Easy Child" is characterized by regularity, positive approach responses to new stimuli, high adaptability to change and mild or moderately intense mood which is mostly positive.

The second category of temperamental style is the "Difficult Child" characterized by irregularity in biological functions, negative withdrawal responses to new stimuli, non-adaptability or slow adaptability to change, and intense mood expressions which are frequently negative.

The third category identified by this study describes the "Slow-To-Warm-Up Child". This temperamental style is marked by a combination of negative responses of mild intensity to new stimuli with slow adaptability after repeated contact.

As Martin, (1988) illustrates, there is agreement amongst researchers as to the general domain of temperament; however, there is disagreement as to how many temperamental variables exist. An example of the different variables

proposed by four researcher-theorists is presented in Table I.

TABLE I

FOUR LISTS OF TEMPERAMENT VARIABLES

(Martin, 1988, p.6)

Thomas & Chess (1977)	Buss & Plomin (1975)	Diamond (1957)	Eysenck (1953)
Activity	Activity	Aggressiveness	
Rhythmicity (regularity of body functions)			
Adaptability (speed of adjustment to change)		Fearfulness	
Approach/ withdrawal (in social situations)	Sociability	Affiliativeness	Introversion-extroversion
Threshold (sensitivity to stimulation)			
Intensity (primarily emotional)	Emotionality		Neuroticism
Distractibility	Impulsivity	Impulsivity	
Persistence (attention span and continuation of difficult learning and performance)			
Mood (degree of pleasant versus unpleasant affect)			

This appears to be a difference in perspective, but upon closer examination, many of the variables listed by the different researchers can be correlated to the categories listed by the other researchers. Despite having a different number of variables, the researchers in this field are

essentially in agreement with regard to the general constructs of temperament. These are as follows (Martin, 1988, p. 3-4):

1. Temperament is an individual difference concept of the trait variety.
2. It is assumed that temperamental traits have some trans-situational and temporal stability, although it is recognized that environments alter significantly the manifestation of that trait.
3. Temperament is thought to be of genetic or constitutional origin.
4. Temperament refers to the style of expression of a behavior or the "how" of behavior rather than to the "what" or the "why."
5. Temperament is a manifestation of reactive and self-regulative processes. In this context, reactivity refers to the "excitability, responsivity, or arousability of the behavioral and physiological systems of the organism (Rothbart & Derryberry, 1981.)" Self-regulation refers to attempts to control environmental stimulation in order to keep it within a comfortable range.

How important is it to examine the temperament of children who are at risk for developmental delays? According

to Sparks, (1989) assessment of temperament in the at-risk population may be critical. Through understanding of a child's temperament, it may be possible to modify care-giver behavior to create an environment that is more in consonance with the child, thereby creating the most optimal conditions for development.

BEHAVIOR AND TEMPERAMENT

From birth, temperamental characteristics are manifested through behavior. Our descriptions of temperament are based on an individual's behavior relative to the environment (Thomas & Chess, 1977). As an individual grows and matures, behavior becomes the defining element of temperament.

BEHAVIOR DISORDERS AND LANGUAGE DISORDERS

Behavioral issues as they relate to speech and language disorders have been commented on in the literature since 1937 when Orton (1937) observed that as children with language handicaps grow older, behavioral problems become overlaid and intertwined and separating the two is very difficult. Orton's observations have been followed up by many subsequent studies. These studies have made attempts to more clearly identify what types of behavioral disorders coexist with what types of communication disorders and if there is a causal relationship.

Baker, Cantwell, and Mattison (1980) examined behavioral

disorders in children with pure speech problems as compared to children with speech and language disorders. More behavioral disturbances were reported for children with speech and language disorders than with pure speech disorders. The most significant behavior reported was hyperactivity. This study did not include a comparison of children with normal language development. This study also did not assess temperament, however, it may be possible to make inferences based on the report of "hyperactivity" in terms of that single temperamental trait. The significance of this study is that children with speech and language disorders often exhibit behavioral abnormalities and this should be taken into account when planning intervention.

Some people believe that behavior or temperamental traits, such as shyness, limited attention span, and stubbornness, interfere with language development (Hargrove, 1984) when, in fact, the language disorder may be implicated in causing the behavioral disorder (Baker & Cantwell, 1982). If a child does not process the language used in verbal directions, he/she may behave in an inappropriate fashion and receive negative consequences. This pattern may lead to a shyness or reluctance to engage in communication for fear of future negative consequences, thus promoting negative temperamental or behavioral characteristics. At this point in time, the prior scenario is purely speculative. Research in the areas of temperament and language development may reveal if, and how, these two areas of development interrelate.

There is growing evidence of the inter relatedness of

behavior disorders and language disorders. Among children with behavioral or psychiatric disorders, the prevalence of language disorders varies from 24% in an upper-middle class private psychiatric practice (Chess & Rosenberg, 1974) to 50% in a lower class child-inpatient population (Gualtieri et al., 1983). It's interesting to note that the percentages are very similar in the reverse situation. Of children with language disorders, approximately 50% can be diagnosed as having a psychiatric disorder (Beitchman, Nair, Clegg, & Patel, 1986; Cantwell & Baker 1987; Richman, Stevenson, & Graham, 1975). These studies provide evidence to support the relationship between behavior disorders and language disorders. This information is important for parents, speech-language pathologists, teachers, and mental health professionals to coordinate intervention that addresses all of a child's needs (Giddan, 1991).

The first study to report on language and behavior in the preschool child was done by Stevenson and Richman (1978). They found 14% of their random sample exhibited behavioral problems. In the language delayed population, 59% of the children exhibited behavioral problems. This appears to be a significant finding but the relationship between behavioral problems and language delay cannot be determined because the study does not screen out children with hearing loss, general mental retardation, or factors such as social deprivation (Tallal, Dukette, Curtiss, 1989).

Tallal, Dukette, and Curtiss (1989) discuss the difficulty in comparing and integrating findings across

studies due to the confusion of terms and definitions. This author agrees. There is little consistency across studies to identify language disorder, language delay, and language impairment. There are also considerable differences in the definition of behavioral disorders and in what attributes are examined in the different behavioral rating scales. These factors are only a few which contribute to thecomplexity of doing human communication disorder research.

As a result of the problems identified in current research, Tallal, Dukette, and Curtiss (1989) prepared a study of the behavioral profile of language impaired 4-year-old children with an attempt to control for as many variables as could be identified. Results of this study supported previous research by finding increased behavioral disturbance in children with developmental language disorders. This study also draws a correlation between language disorders and behavior disorders, and neurodevelopmental (attention, perception, motor) delay.

As part of a longitudinal study, Paul (1990) compared behavioral traits of children with slow expressive language development at the age of two to a control group. Her findings support the previously cited studies which found a significant percentage of behavioral disorders occurring within the language impaired population. This information can prove useful in consulting with parents and day care providers in suggesting strategies for behavior management and support for continued language stimulation within the home setting.

A portion of the children identified as SELD at age two improved to within the normal range of language development by age four but 57% continued to show expressive deficits (Paul & Bauersmith, 1991). If this trend continues, more children will move within the normal range of language development but some will not. One of the purposes in pursuing studies about behavior disorders in relationship to language disorders is an attempt to identify predictive variables (Paul, 1991). By comparing temperamental traits among children with normal language development and those with SELD over a continuum of time, a significant correlation may or may not be identified.

TEMPERAMENTAL CHARACTERISTICS OF CHILDREN AT-RISK FOR DEVELOPMENT DISORDERS

What role do temperamental characteristics play in the profile of developmentally delayed children? Mehregany (1991), conducted a study of children with psychiatric disorders to examine the relationship of behavior and temperament in this population. Mehregany hypothesized that there would be a high correlation between "difficult child" temperamental characteristics and identification of behavioral disorder. Mehregany found that only one of the "difficult child" characteristics, that of low rhythmicity, distinguished children with behavior disorders. Other temperamental characteristics which correlated with identification of behavioral disorder were high

distractibility and high activity level. Mehregany suggests that the temperamental characteristics which correlate highly with behavior disorders may identify children at risk for psychopathology.

A study by Maziade et al. (1990) examined the status of adolescents who had extreme temperament at age 7. This study suggests that extremely difficult temperament at age 7 is associated with clinical behavioral disorders in adolescence. However, family behavior control when considered with the temperament of the child was a better predictor of adolescent behavior than temperament alone. This supports the influence of the environment in shaping behavior.

Limited research has been done in the area of children with developmental delays according to a literature review by Goldberg and Marcovitch (1989). The research that has been done has been inconclusive because it has attempted to compare temperamental characteristics of developmentally delayed children with data obtained from the normal population. This may lead to some inappropriate conclusions. For example, in a study by Marcovitch et al. (1987), a group of developmentally delayed preschoolers (Down syndrome, neurological problems, unexplained delays) were rated as easier than the normative sample on the Toddler Temperament Survey (Fullard et al., 1984). However, the mothers' impressions showed they perceived their children to be more difficult than the ratings indicated. In the case of Down syndrome, this perception of "difficult" may be related to the temperamental characteristic of persistence. Children

with Down syndrome were rated as less persistent than normally developing children. Normal children with low persistence are not typically perceived as "difficult" but in the case of Down syndrome, mothers may view this characteristic as "difficult". This creates somewhat of a dilemma in applying temperamental rating scales to the developmentally delayed population when the rating scales have been normed on typical children.

Despite being identified as having "difficult" temperaments as infants, older children with Down syndrome are rated as temperamentally easier when compared to normally developing peers (Goldberg & Marcovitch, 1989). This shift toward easier temperament as children mature has also been reported in normally developing children (McDevitt & Carey, 1978). It would appear that a child's temperament may adapt to the surrounding environment, or, the environment (parents and caregivers) may modify to meet the temperamental style of the child thereby creating a "goodness of fit" between the child and the environment.

In research done by Sameroff, (1974) it was noted that children who received a Difficult Child temperament score on the Carey questionnaire at four months of age showed a highly significant correlation with the Bayley I.Q. score at 30 months of age. This correlation was more significant than comparing Bayley scores at four months and at 30 months. The results of this one study might lead us to rely more heavily on ratings of temperament as predictive of future cognitive ability rather than early cognitive assessments. Further

research in this area needs to be done to support these findings.

In a study conducted by Heffernan et. al. (1982) no significant difference in temperament was found in a group of neurologically impaired children as compared to normal children. Heffernan et. al. found no confirming reports on specific temperament characteristics associated with specific handicapping conditions at the time of their study. This may be due to the fact that there is no correlation between temperament and developmental handicaps or it may be that research to date has not identified the relationship. The present study hopes to add information to the literature regarding this possible relationship.

Slomkowski et al, (1992) looked specifically at the relationship between temperament and language from toddlerhood to middle childhood. To assess temperament the Infant Behavior Record (IBR) (Bayley, 1969) was administered at the age of 2. The results were compared to language testing at age 2, age 3, and age 7. Results demonstrated a significant positive correlation between the temperamental construct of affect-extraversion at age 2 and language measures at age 7. This positive correlation should focus our attention on the role of the child as an active participant in learning language.

THE DEVELOPMENT OF TEMPERAMENTAL RATING SCALES

The New York Longitudinal Study (NYLS) (Thomas & Chess,

1977) had a major impact on the development of temperamental rating scales as a measure of temperament by establishing a normative database for comparison. Carey, (1970) developed the Infant Temperament Questionnaire as a means of establishing a temperament profile for his infant patients. He constructed a parental rating system to measure each of the nine dimensions of
temperament as identified by the NYLS.

Carey was also involved with his colleagues in developing additional parental rating scales. The Toddler Temperament Scale (Fullard, McDevitt, & Carey, 1984) was developed for 1- to 3-year-olds, and the Behavioral Style Questionnaire (McDevitt & Carey, 1978) was developed for 3- to 7-year-olds.

In 1975, Buss & Plomin identified four aspects of temperament. These aspects were emotionality, activity, sociability, and impulsivity (EASI). Through ongoing research, they dropped impulsivity as an identifying feature in 1984. Through development of the EAS (emotionality, activity, sociability) Theory of Temperament, Buss & Plomin created the EAS Temperament Survey for Children. This rating scale has different forms for parental ratings and teacher ratings. Survey items were based on data accumulated from the NYLS. Early reports of psychometric properties were related to the earlier version of the EASI and not the current EAS. This instrument reports limited information on its psychometric properties prior to 1994 (Boer & Westenberg, 1994).

Martin, (1988) has made an attempt to draw the varying elements described as temperament into a more unified focus through his development of the Temperament Assessment Battery for Children. In developing this instrument, Martin has combined the variables identified by earlier researchers to come up with the following six temperamental variables: Activity, Adaptability, Approach/Withdrawal, Emotional Intensity, Ease-of-Management-Through-Distraction (EMTD) or Distractibility, and Persistence. Rating is done on a seven point rating scale. By observing and rating children on these different variables, an understanding of an individual child's temperamental style may be gained.

A few problems have been identified with regard to using parental ratings as the sole measure for assessment of temperament. First, there is the problem of rater bias (Emde et. al., 1992). In earlier attempts to develop valid measures of temperament, parents were used as raters because of their familiarity with the child and because they are a natural part of a child's environment (Martin, 1988). This may yield results of limited value because parent's are emotionally involved with their subject, have their own point of view, and have their own normative frame of reference (Martin, 1988). These results may be somewhat subjective and difficult to duplicate by another rater. Parents are confined by their own history and perspective. Although the parental rating scale may have limitations when considered on its own, it is an extremely valuable piece of information when combined with other professionals' observations

(Diamond, 1993).

A second problem associated with a single rater of temperament, whether from a parental rating or other rater, is that the rater may not observe the child in all the various environments in which the child interacts and he/she may behave differently in different environments (Martin, 1988). The third difficulty in rating a child's temperament is that a child may behave differently from one time to the next in the same setting (Martin, 1988).

To attempt to control for these areas of difficulty, Martin, (1988) designed his assessment battery to include observations by three different raters: the parent, the teacher, and the clinician. An analysis of Martin's normative sample revealed low correlations among all three of the rating forms. Factors contributing to the low correlations are: a) different questions used to assess equivalent factors across rater type (parent, teacher, and clinician), b) situational variance is included due to different behaviors seen by the raters in the environment in which they see the child, and c) raters attend to different characteristics because these characteristics vary in salience for each setting. Despite the low correlations among the three rating instruments, the inclusion of ratings from a cross-section of a child's environment by three different individuals will provide a more global assessment of a child's temperamental style.

Analysis of each separate rating scale (parent, teacher, and clinician) revealed strong reliability in internal

consistency with coefficient alphas ranging from .70 to .90. Test-retest reliability for the teacher forms ranged from .70 to .85 for the same teacher and from .40 to .65 for different teachers. This same reliability on the parent forms revealed a range of .43 to .70 for mothers and .37 to .62 for fathers. The validity of all forms of this instrument has been reported through relationship to achievement in first grade based on teacher's grades. A correlation of .76 is reported for reading scores as well as a correlation of .65 for math grades.

SUMMARY

The evolution of our understanding of temperament is ongoing. The New York Longitudinal Study (Thomas & Chess, 1977) was a major study which identified nine distinct categories of temperament. Research since that time has attempted to further define the categories which most accurately reflect temperament. This process has led researchers to identify different numbers and descriptions of categories. Despite this apparent disagreement, there has been general agreement on the constructs of temperament. Temperament is believed to be of constitutional origin and impacts the **how** of behavior. It is also considered in relationship to environmental demands. If a child's temperamental style is in consonance with his/her environment, the child is perceived as easy. If the child's temperamental style is in disharmony, or dissonance with

his/her environment, the child is perceived as difficult. Perceptions of temperament are based on goodness of fit.

Why is it important to examine a child's temperamental style relative to language development? The entire notion of temperament is **how** an individual interacts with his/her environment (Thomas & Chess, 1977; Fullard et. al., 1984). It stands to reason, then, that temperament may be a factor in a child's course of language development.

Many studies have demonstrated a relationship between behavioral disorder and language disorders (Orton, 1937; Baker, Cantwell, & Mattison, 1980; Hargrove, 1984; Baker & Cantwell, 1982; Chess & Rosenberg, 1974; Gualtieri et al, 1983; Beitchman et al, 1986; Richman, Stevenson, & Graham, 1975). We have also seen how temperament is correlated to behavior (Mehregany, 1991; Maziade et al., 1990). We now need to take a more focused look at the contribution of temperament to language development.

The purpose of this study was to compare parent and clinician temperament ratings among three groups of first grade children with varying levels of language development. Review of the literature reveals some distinct relationships between language disorders and behavior disorders. Since our perception of temperament is observed through behavior, it is possible that temperament may be a factor in the development of language. We have examined one study that correlates the temperamental characteristic of affect-extraversion with language scores. We will now look further at additional temperamental characteristics that may give us more

information about the complex interrelation of factors impacting language development.

CHAPTER III

METHODS AND PROCEDURES

SUBJECTS

A total of 51 subjects for this study were selected from participants in the Portland Language Development Project (PLDP), a longitudinal study of language development.

Recruitment

Subjects were originally recruited when they were 20 to 34 months of age through local pediatric offices and newspaper advertisements. After signing a permission form (Appendix B) for their children to be participants in the study, parents of perspective subjects were asked to fill-out a questionnaire (Appendix C) which provided the following information: parental occupation, child's birth date, the number of different words the child used, and whether or not the child put words together to form short sentences.

Diagnostic Group Assignment-Age 2

Participants were then placed into one of two diagnostic groups: 30 subjects were identified as late talkers (LT) and 30 subjects were identified as having normal language (NL) development. This determination was based on scores on the Language Development Survey (Rescorla, 1989) (Appendix D), a

checklist of 300 of the most common words in children's early vocabularies. This instrument has been reported to show excellent reliability, validity, and specificity in identifying children with expressive language delay. Those children who used less than 50 words on the LDS and no two word combinations, according to parent report, were considered to be in the LT group. Children who used 50 words or more on the LDS and two word combinations, according to parent report, were considered to be in the NL group.

Subjects were matched as closely as possible for chronological age, race, sex, and socioeconomic status (SES). The SES was based on a 4 factor index combining occupational and education status of the parent(s), resulting in a weighted scores of 1 to 5, with 1 being the highest SES level and 5 the lowest (Hollingshead, 1975). All subjects passed a hearing screening at 25 dB HL, received a score of 85 or better on the Bayley Scales of Infant Mental Development (Bayley,1969), and passed an informal observational screening for neurologic disorders and autism.

A follow-up language evaluation was done on each child at ages 3, 4, kindergarten, and first grade. Table II displays demographic information of the two groups at intake, including mean ages at intake, SES, # words spoken at intake and sex ratio.

TABLE II

GROUP DESCRIPTION AT INTAKE

		Age (in months)		# Words		SES*		
Group	n	Mean	SD	Mean	SD	Mean	SD	%Males
Normal	23	26.1	4.3	212.2	66.1	3.5	1.2	65
LT	28	24.8	3.9	29.7	26.2	3.6	.8	71

*derived from Hollingshead's (1975) four factor scale of social position, on a scale from 1 to 5, where 1 is the lowest and 5 is the highest SES rating

Follow-up Assessment: First Grade

Fifty-one of the participants of the original 60 in the longitudinal study were evaluated during their first grade year (ages 75-91 months). Twenty-eight of the children were from the late talkers group (LT) and 23 of the children were from the normal language (NL) group. As part of the language evaluation during the first grade visit, a spontaneous language sample, consisting of 50 utterances, was collected from each child during free play in a clinic room with his/her parent. Each language sample was orthographically transcribed and scored according to Developmental Sentence Scoring (DSS) (Lee, 1974) criteria (Appendix E) which examines grammatical development.

Diagnostic Groups-First Grade

Late talkers were divided into two subgroups as indexed

by DSS scores at first grade. The first group consisted of 22 children who were identified as late talkers at intake but had achieved normal language scores by the first grade as indexed by a DSS (Lee, 1974) of 6.35 or greater. This group is referred to as the history of expressive language delay (HELD) group.

The second group consisted of 6 children who were identified as late talkers at intake and continued to show delays in expressive language development in first grade as indexed by a DSS of less than 6.35. This group is referred to as the expressive language delayed (ELD) group.

There were 23 children who were identified as having normal language development at intake. These children demonstrated DSS scores of 6.35 or greater at first grade. This group is referred to as the normal language (NL) group.

The demographic make-up of the three groups at first grade follow-up is illustrated in Table III.

TABLE III

GROUP DESCRIPTION AT FIRST GRADE

		Age (in months)		DSS		SES*		
Group	n	Mean	SD	Mean	SD	Mean	SD	%Males
Normal	23	82.4	3.8	8.1	1.3	3.5	1.2	65
HELD	22	83.2	2.6	7.7	1.0	3.6	.7	73
ELD	6	84.2	2.8	5.5	.7	3.7	1.0	67

*derived from Hollingshead's (1975) four factor scale of social position

INSTRUMENTATION

The Language Development Survey (Rescorla, 1989) is a checklist of 300 of the most common words found in young children's vocabularies. This survey has found that parent report of an expressive vocabulary of less than 50 words or no use of two-word combinations by the age of 20-34 months is highly correlated to standardized language measures in toddlers. According to Dale, Bates, Reznick and Morisset (cited in Paul, 1993), the average expressive vocabulary size at 20 months is 155 words with a standard deviation of 87. Therefore, children who are using an expressive vocabulary of less than 50 words at 20 months fall more than one standard deviation below the mean. This instrument has been reported to be highly reliable, valid, sensitive, and specific in identifying language delay in toddlers.

A Sony Dictator/Transcriber BM-88, a Sony ECM-D8 electret condenser microphone, and Sony brand cassette tapes were used for recording spontaneous language samples.

The Developmental Sentence Scoring (DSS) (Lee, 1974) is an assessment procedure to analyze the syntactic structure and complexity of language in children ages 2 years, 0 months to 6 years, 11 months. A spontaneous language sample is collected containing 50 utterances which have a subject predicate relationship. These sentences are specifically analyzed for components of eight grammatical categories as described by Lee (1974) (see Appendix E). A score of 1 to 8 (1-lowest level of complexity, 8-highest level of complexity)

is given for each utterance. A total DSS score is derived by adding all 50 sentence scores and dividing by 50 to arrive at a mean. This mean is identified as a child's DSS. The mean is then compared to normative data which has been compiled by Lee (Appendix F). This instrument reports high internal consistency with an overall reliability coefficient of .71. It also reports high split-half reliability with a coefficient of .73 which indicates good stability of scoring procedures.

The Temperament Assessment Battery for Children (TABC) (Martin, 1988) was selected to rate temperament characteristics of the subjects in the first grade. It is a three-instrument battery of rating scales consisting of Parent, Teacher, and Clinician Forms. These forms are designed to measure temperament characteristics of children ages 3 through 7 years. Only the Parent and Clinician Forms were utilized for this study. The Parent Form (Appendix G) consists of 48 items describing behaviors of children as they occur in the home. The raters score each item on a 7 point rating scale according to the frequency with which the behavior occurs (1-hardly ever, 2-infrequently, 3-once in a while, 4-sometimes, 5-often, 6-very often, or 7-almost always).

Six temperamental variables are rated on the Parent Form of the TABC. These include:

activity	motoric vigor
adaptability	ease and speed of adjustment to new social circumstances

approach/withdrawal	tendency to approach or withdraw from new social situations
emotional intensity	the vigor of expression of affect, particularly negative affect
ease-of-management-through-distraction (EMTD)	ease with which a child could be distracted away from inappropriate behavior toward appropriate behavior by an adult caretaker.
persistence	attention span and tendency to stick with difficult learning or performance situations

(Martin, 1988).

The Clinician Form (Appendix I) is designed to be used in a psychoeducational setting. This form follows the same 7 point rating scale and examines 5 of the 6 temperament variables examined on the Parent Form. The variable of emotional intensity is not included on the Clinician Form due to Martin's (1988) experiential observation that a clinic is a poor place to observe the emotional intensity characteristics of most children. In addition, the variable, ease-of-management-through-distraction (EMTD), is called distractibility on the Clinician Form. Martin notes that this variable has different forms in different environments and it is important to examine the various expressions.

The TABC was selected for its multiple rater format.

According to Martin (1988), subjective rating scales have limitations in four defined areas. Source variance occurs as a result of the rating also being a measure of the frame of reference of the rater as well as a measure of the child's behavior. Situational variance occurs when a child's behavior may be specific to only one situation. Temporal variance occurs when a child behaves in a given way in a given situation at one time but not another. The final type of variance described is instrument variance which occurs when the ratings of a single rater on two different measurement devices thought to measure the same construct are not identical. Martin proposes that the best way to minimize these problems is to collect ratings from more than one rater in more than one setting which will yield a more representative profile of a child's temperament.

Martin (1988) reports the standardization of the Parent Form included a sample group of 1,381 children from three regions of the country, the Teacher Form included a sample of 577 children, and the Clinician Form included a sample of 153 children. All forms reported high internal consistency coefficient alphas to be within a range of .70 to .90. Interrater reliability was adequate with a reported coefficient alpha of .50 for "normal" subjects. The validity of this instrument is demonstrated through its correlation to achievement. Teacher grades at the end of first grade were correlated to the entire temperament set yielding a correlation of .76 for reading grades and .65 for mathematics grades.

PROCEDURES

The DSS score for each subject was based on a spontaneous language sample which was collected during a free play session between the subject and his/her parent in a clinic room using a set of Colorforms depicting domestic scenes. Conversational exchanges were recorded for 15 minutes on audiotape and transcribed orthographically by trained graduate student research assistants. Fifty utterances were selected from these transcripts which contained a subject predicate relationship. These utterances were then analyzed utilizing DSS criteria (Appendix E) and a numerical score was given to each utterance. These scores were then totaled for each subject and and a mean calculated. The resulting score determined group assignment for this study.

For purposes of this study, only the Parent Form and Clinician Form of the TABC were utilized. The Parent Forms were completed as part of the first grade follow-up evaluation. Parents were placed in a quiet, distraction free environment to complete the questionnaire. They were instructed to consider their child's behavior within the past three months only. If a question was found to be confusing, parents were instructed to skip that item.

The Clinician Forms were completed by graduate students in speech-language pathology immediately following the first grade evaluation of the subjects' language development. Results from the Parent Form questionnaires were transferred

to corresponding scoring sheets (Appendix H). Results from the Clinician Form questionnaires were tabulated and scored on the same form according to the TABC instructions. T-scores were derived from each item on the questionnaires being assigned a raw score of 1-7. All questions relating to a specific temperament variable were then totaled on the scoring sheet. This raw score was then compared to Martin's (1988) normative data to get a T-score. A mean for all T-scores for a specific variable was calculated for each diagnostic group.

DATA ANALYSIS

The resulting T-scores for each temperament variable were the basis for analysis. The numerical raw score for each question was recorded for the designated temperament variable on the scoring sheet. All raw scores for each item were then added to yield one raw score per factor. This raw score was then compared to the normative data provided by Martin (1988) to obtain a corresponding T-score.

For each group (NL, HELD, ELD), a mean T-score was calculated for each temperament variable. These means were then compared to look for significant differences among the three groups for each of the temperament variables.

Two separate one-way analyses of variance (ANOVA) were conducted. The first ANOVA compared data recorded on the Parent forms. Each of the six individual temperament variables were compared among the three groups. The second

ANOVA compared data recorded on the Clinician forms. The five individual temperament variables were compared in the same manner as the data from the Parent forms. Following the analyses of variance, a Tukey post hoc test was run to determine where significant differences occurred.

Since the three sample groups were of unequal number, the Kruskal-Wallis non parametric ANOVA was also run to look for significant differences in the mean ranks of the three groups. Following this analysis, the Mann-Whitney U test was run to determine where significant differences occurred.

CHAPTER IV

RESULTS AND DISCUSSION

RESULTS

The specific objective of this study was to determine if significantly different traits of temperament are exhibited by first grade children with varying levels of language development. The three groups examined included: 23 children with normal language (NL), 22 children with a history of expressive language delay (HELD), and 6 children with chronic expressive language delay (ELD).

The research question asked was: do first grade children with varying levels of language development exhibit significantly different temperament profiles when analyzed on parent and clinician temperament rating forms? Differences were examined on six variables on the Parent Form including: activity, adaptability, approach/withdrawal, emotional intensity, ease-of-management through distraction, and persistence. Differences were also examined on five variables on the Clinician Form including: activity, adaptability, approach/withdrawal, distractibility, and persistence.

The means and standard deviations for each of the dependent measures were computed. The data from the Parent Forms are displayed in Table IV and the data from the Clinician Forms are displayed in Table V.

TABLE IV

MEANS AND STANDARD DEVIATIONS FOR EACH TEMPERAMENT VARIABLE PARENT FORMS

	Normal	HELD	ELD
Activity	50.3	49.1	52.2
SD	9.7	9.4	12.0
Adaptability	48.0	47.0	41.7
SD	8.1	10.0	13.2
Approach/Withdrawal	51.4	45.8	41.7
SD	10.2	10.5	13.7
Emotional Intensity	49.6	51.5	49.7
SD	9.0	10.6	9.9
Ease-of-Management Through Distraction	44.0	44.3	39.3
SD	11.1	10.8	12.8
Persistence	52.3	49.8	44.7
SD	7.4	7.7	8.8

TABLE V

MEANS AND STANDARD DEVIATIONS FOR EACH TEMPERAMENT VARIABLE CLINICIAN FORMS

	Normal	HELD	ELD
Activity	49.4	49.2	48.0
SD	8.0	8.8	6.0
Adaptability	50.3	46.6	52.5
SD	6.2	9.0	3.3
Approach/Withdrawal	50.8	46.6	47.8
SD	5.0	5.2	5.8
Distractibility	51.3	54.5	49.8
SD	8.7	10.2	3.0
Persistence	54.3	53.9	55.0
SD	5.0	6.0	3.7

The data were analyzed to determine whether significant differences existed among the language diagnostic groups of NL, HELD, and ELD on temperament variables rated by parents and clinicians to answer the research question.

Separate analyses of variance (ANOVA) were run for the variables on the Parent Forms and for the variables on the Clinician Forms to look for significant differences on any of the variables between groups. Results of the ANOVA for the

Parent Forms indicated a p-value of .08 for the variable of approach/withdrawal between the NL group and the ELD group, indicating a trend toward significance on this difference.

A significant difference was found on the Clinician Forms for the variable of approach/withdrawal. A Tukey test showed the significant difference on this variable to exist between the HELD group and the NL group.

Since the sample sizes for the three diagnostic groups were of unequal number, the reliability of the statistical data may be in question. To further analyze the data, the non parametric Kruskal-Wallis test was computed to test for differences between pairs of means. The results of this analysis were in agreement with the parametric ANOVA indicating a significant difference on the temperament variable of approach/withdrawal on the Clinician Forms between the HELD group and the NL group. The results of the analyses are displayed in Tables VI and VII.

The results of this study revealed one significant difference on the Clinician Forms for the variable of approach/withdrawal between the NL and the HELD groups; in addition, there was a trend in the same direction on the Parent Forms between the NL and the ELD groups.

DISCUSSION

The data collected on the Parent Forms to answer the research question regarding differences in temperament profiles among the three language diagnostic groups suggested

TABLE VI

ANOVA, TUKEY TEST, AND KRUSKAL-WALLIS TEST RESULTS
based on TABC PARENT FORMS

Variable	ANOVA F	TUKEY N/HELD	TUKEY N/ELD	TUKEY HELD/ELD	KRUSKAL-WALLIS
Activity	.7793	NS	NS	NS	
Adaptibility	.3558	NS	NS	NS	
Approach/Withdrawal	.0824	NS	NS	NS	
Emotional Intensity	.7884	NS	NS	NS	
Ease-of-Management Through Distraction	.6124	NS	NS	NS	
Persistence	.0965	NS	NS	NS	

NS - statistically not significant

TABLE VII

ANOVA, TUKEY TEST, AND KRUSKAL-WALLIS TEST RESULTS
based on TABC CLINICIAN FORMS

Variable	ANOVA F	TUKEY N/HELD	TUKEY N/ELD	TUKEY HELD/ELD	KRUSKAL-WALLIS
Activity	.9333	NS	NS	NS	
Adaptibility	.1229	NS	NS	NS	
Approach/Withdrawal	.0281*	p <.05	NS	NS	.0127*
Distractibility	.3758	NS	NS	NS	
Persistence	.8956	NS	NS	NS	

* - statistically significant
NS - statistically not significant

a trend towards a difference on the variable of approach/withdrawal between the NL and ELD groups on parent ratings and a significant difference on approach/withdrawal between the HELD group and NL group on clinician ratings. This variable was designed to measure the tendency to be socially outgoing, versus shy or reserved (Martin, 1988). Differences may be greater on Clinician Forms because when a child feels comfortable and secure, as in the presence of her/his parents, he/she may be more inclined to approach new activities or situations . However, when a child does not feel comfortable and secure, as in circumstances where a stranger (clinician) is observing or attempting to interact with him/her, he/she may withdraw. It is logical that the clinicians might perceive lower approach/withdrawal tendencies in the subjects than the parents observe.

While only HELD differences reached significance, ELD differences showed a trend in the same direction. This suggests low approach/withdrawal tendencies may be a common feature in late talking children. Slomkowski, et al (1992) reported a related finding in their research regarding temperament and language. Their research describes a longitudinal correlation between the temperament variable of high affect-extraversion, which is comparable to Martin's (1988) variable of approach/withdrawal, and language skills at ages 2, 3, and 7. Specifically noted was the temperament variable of affect-extraversion reported in toddlerhood which was found to make a unique contribution in middle childhood. The research of Slomkowski, et al, states that children who

are more outgoing or extraverted as toddlers have better receptive and expressive language skills at age 3 and are demonstrating stronger advances in receptive skills than less extraverted peers at age 7. The converse of this finding is reported in this present research. Children with less extraverted (approach), and more withdrawn temperaments may experience varying levels of delay in acquisition of language skills.

The limited significant differences among the diagnostic groups of NL, HELD, and ELD may be related to the differences in sample sizes. The NL group and the HELD group were close to the same size with 23 and 22 subjects, respectively. The ELD group had less than a third the number of subjects than the other two groups in the study. The low number of 6 subjects in the ELD group may have limited the ability to draw conclusions about these results. If the subject groups were of equal size, we may have observed greater significance for the variable of approach/withdrawal on the Parent Forms or we may have seen additional differences among the other temperament variables.

These data suggest that within the HELD group, language skills have developed to within the normal range by the first grade but the temperamental characteristic of low approach/withdrawal exists. It is interesting to note that these subjects were not demonstrating shy characteristics as toddlers according to results of the Childhood Personality Scale (Paul and James, 1990). This may be a long-term effect of the interaction between a child with language delay and

the communication environment. If a child is experiencing difficulty communicating, he/she may be less likely to engage in social communication and may miss critical opportunities to engage in rich language interactions. The opposite may also be true. If a child is demonstrating shy characteristics, he/she may withdraw from social interactions thereby limiting the type and amount of communication so necessary to increasing language skills. This may be also be true for children in the ELD group. Although this research did not reach statistical significance for the ELD group for the approach/withdrawal variable, a strong trend towards low approach/withdrawal characteristics was noted.

CHAPTER V

SUMMARY AND IMPLICATIONS

SUMMARY

Many young children develop language over a broad range of ages, yet present as having normal language development. When language development lags behind what is considered a normal time line, it is important to consider the various factors that may contribute to the delay in development. Since language is a social behavior, temperament, or the **how** of behavior, must be considered as one of the variables in its development.

The purpose of the current study was to examine various aspects of temperament among three groups of children with varying language histories. The specific question to be answered was, do significant differences occur on parent and clinician questionnaires of temperament among three groups of first grade children demonstrating varying levels of language development: those with NL, those with HELD, and those with ELD?

Subjects for this study included 23 children with normal language (NL), 22 children with a history of expressive language delay (HELD), and 6 children with chronic expressive

language delay (ELD). The groups were compared on six variables of temperament on Parent Forms including, activity, adaptability, approach/withdrawal, emotional intensity, emotional-management-through-distraction (EMTD), and persistence. The groups were also compared on five variables of temperament on Clinician Forms including, activity, adaptability, approach/withdrawal, distractibility, and persistence.

The data were analyzed to see if significant differences existed between the language diagnostic groups. On measures where an ANOVA test found a significant F value ($p<.05$), a Tukey Test was done to determine where the significant difference among the groups existed. In addition, since the subject groups were of unequal number, the non-parametric Kruskal-Wallis 1-Way ANOVA was also calculated to compare the rank ordered means. On measures where a significant F value ($p<.05$) occurred, a Mann-Whitney U Test was done to determine where the significant difference among the groups existed.

On the Parent Forms, a trend toward low approach/withdrawal characteristics was observed between the NL and ELD groups. On the Clinician Forms, a significant difference was observed on the variable of approach/withdrawal between the NL group and HELD group. Both the parametric ANOVA and non-parametric Kruskal-Wallis analyses were in agreement on this finding. These results suggest a trend for late talking and expressive language delayed children to exhibit low approach/withdrawal characteristics. This tendency may be related to the

interaction of a child with a language delay and the communication environment.

These results must be viewed tentatively because the sample groups were of unequal numbers. If all the diagnostic groups had been of equivalent size, the results may have yielded stronger significance.

IMPLICATIONS

Research

The findings of this current study must be substantiated by further research. The usefulness of the present research is limited due to the small size of the ELD group. A duplicate study utilizing sample groups of equal sizes would lend greater significance to the current results.

The current research examined temperament of the sample subjects at first grade. It may be useful to examine the temperamental characteristics of children when they are first identified as language delayed between the ages of 20 to 34 months and compare those results with temperament profiles when the subjects are in first grade. There is a presumption that temperament is innate and changes only slightly as individuals mature. Were these children demonstrating low approach/withdrawal tendencies as preschoolers or have these tendencies changed as the children have matured?

A follow-up longitudinal study between the ages of 10 to 12 may also contribute information regarding the long-term effects of a "shy" personality. Late talkers who demonstrate

the temperamental characteristic of low approach/withdrawal may demonstrate pragmatic deficits as they enter the middle school years. This information may prove useful in justifying follow-up evaluations within the school age population.

An additional area of further research may be to investigate the possibility of hypersensitivity to various sensory stimuli which may be interpreted as shyness or low approach/withdrawal tendencies in young children. It is possible that what is generally perceived as shyness, may, in fact, be a hypersensitivity to auditory and/or visual stimuli which causes a child to withdraw. If sensory hypersensitivity is implicated as a factor in delayed language development, therapeutic intervention may be focused on sensory integration prior to, or in conjunction with, language intervention.

Clinical

One might conclude from these results that many children who are language delayed between the ages of 20 to 34 months, without concomitant delays, should not receive early language intervention services because a large number of them may be shy and will outgrow their deficits by the time they are in first grade. Caution should be exercised in making this conclusion. Children who are language delayed and present with a shy personality may be at greater risk for more subtle, pragmatic deficits. These children are less inclined to interact socially and verbally with people

outside their immediate families thereby missing the opportunity to practice important communication skills and gain a wider range of language input.

Clinically, an awareness of a child's temperamental style may be critical to appropriate program planning. If a child presents with shy characteristics, small group therapy may be warranted within a calm atmosphere. Additionally, techniques for intervention might utilize gentle enticements to participate rather than strong performance requirements. A child with low approach/withdrawal tendencies may feel more safe and secure if he/she has control of when and how to participate. Establishing a trusting rapport with such a child may be essential to successful intervention and might be the first objective. Once rapport is established, language intervention techniques may be more likely to be successful.

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APPENDIX A

HUMAN SUBJECTS APPROVAL

OFFICE OF GRADUATE STUDIES AND RESEARCH
Research and Sponsored Projects

DATE: October 6, 1995

TO: Loretta M. Kellogg SSN# 376-62-4427

FROM: for Laurie Skokan, Chair, HSRRC, 1995-96

RE: HSRRC Waived Review of Your Application titled "Correlation Between Expressive Language Delay and Temperament"

Your proposal is exempt from further HSRRC review, and you may proceed with the study.

Even with the exemption above, it was necessary by University policy for you to notify this Committee of the Proposed research and we appreciate your timely attention to this matter. If you make changes in your research protocol, the Committee must be notified. This approval is valid for one year from date of issue.

c: Maureen Orr Eldred
Rhea Paul, Project Advisor

waiver.mem

APPENDIX B

PARENT PERMISSION FORM

INFORMED CONSENT

I, _____ , hereby agree to serve as a subject in the research project on language development in young children conducted by Rhea Paul.

I understand that the study involves seeing my child yearly for speech and language evaluation and audiotaping conversations between me and my child. I understand that these tapes will be transcribed for analysis of my child's spoken language patterns.

It has been explained to me that the purpose of the study is to learn whether children who begin talking late are at risk for later learning problems.

I may not receive any direct benefit from participation in this study, but my participation may help to increase knowledge which may benefit others in the future.

Dr. Paul has offered to answer any questions I may have about the study and what is expected of me in the study. I have been assured that all information I give will be kept confidential and that the identity of all subjects will remain anonymous.

I understand that I am free to withdraw from participation in this study at any time without jeopardizing my relationship with Portland State University.

I have read and understand the foregoing information.

Date _____ Signature _____

If you experience problems that are the result of your participation in this study, please contact the secretary of the Human Subjects Research and Review Committee, Office of Grants and Contracts, 303 Cramer Hall, Portland State University, 464-3417.

APPENDIX C

QUESTIONNAIRE FOR PARENTS OF CHILDREN 15-30 MONTHS

QUESTIONNAIRE FOR PARENTS OF CHILDREN 15-30 MONTHS OLD

What is your child's:

first name?_____

date of birth?_____

Mother's (or primary parent's) full name?_____

Mother's (or primary parent's) phone number?_____

Mother's occupation?_____

Father's occupation?_____

How many different words can your child say? (It's OK if the words aren't entirely clear, as long as you can understand them).

none _____ 10-30 _____

less than five _____ 30-50 _____

5-10 _____ more than 50 _____

If your child says fewer than ten words, please list them here:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Does your child put words together to form short "sentences"?

Yes _____ No _____

If yes, please give three examples here:

_____

_____

_____

Would you be interested in participating in later parts of this study?

Yes _____ No _____

APPENDIX D

LANGUAGE DEVELOPMENT SURVEY

Source: Rescorla, L. (1989). The language development survey: A screening tool for delayed language in toddlers. Journal of Speech and Hearing Disorders, 54, 587-599.

FOOD	ANIMALS	ACTIONS	HOUSEHOLD	PERSONAL	CLOTHES	MODIFIERS	OTHERS
apple	bear	bath	bathtub	brush	belt	allgone	A,B,C,etc
banana	bee	breakfast	bed	comb	boots	all right	away
bread	bird	bring	blanket	glasses	coat	had	booboo
butter	bug	catch	bottle	key	diaper	big	byebye
cake	bunny	clap	bowl	money	dress	black	curse words
candy	cat	clean	chair	paper	gloves	blue	here
cereal	chicken	close	clock	pen	hat	broken	hi, hello
cheese	cow	come	crib	pencil	jacket	clean	in
coffee	dog	cough	cup	penny	mittens	cold	me
cookie	duck	cut	door	pocketbook	pajamas	dark	meow
crackers	elephant	dance	floor	tissue	pants	dirty	my
drink	fish	dinner	fork	toothbrush	shirt	down	myself
egg	frog	doodoo	glass	umbrella	shoes	good	nightnight
food	horse	down	knife	watch	slippers	happy	no
grapes	monkey	eat	light		sneakers	heavy	off
gum	pig	feed	mirror	PEOPLE	socks	hot	on
hamburger	puppy	finish	pillow	aunt	sweater	hungry	out
hotdog	snake	fix	plate	baby		little	please
icecream	tiger	get	potty	boy	VEHICLES	mine	Sesame St.
juice	turkey	give	radio	daddy	bike	more	scuse me
meat	turtle	go	room	doctor	boat	open	shut up
milk		have	sink	girl	bus	pretty	thank you
orange	BODY	help	soap	grandma	car	red	there
pizza	PARTS	hit	sofa	grandpa	motorbike	shut	under
pretzel	arm	hug	spoon	lady	plane	stinky	welcome
soda	belly	jump	stairs	man	stroller	that	what
soup	bottom	kick	table	mommy	train	this	where
spaghetti	chin	kiss	telephone	own name	trolley	tired	why
tea	ear	knock	towel	pet name	truck	up	woof woof
toast	elbow	look	trash	uncle		wet	yes
water	eye	love	TV	Ernie etc		white	you
	face	lunch	window			yellow	yum yum
TOYS	finger	make				yucky	1,2,3,etc
ball	foot	nap					
balloon	hair	outside					
blocks	hand	pattycake					
book	knee	peekaboo					
bubble	leg	peepee					
crayons	mouth	push					
doll	neck	read					
present	nose	ride					
slide	teeth	run					
swing	thumb	see					
teddybear	toe	show					
	tummy	sing					
OUTDOORS		sit					
flower	PLACES	sleep					
house	church	stop					
moon	home	take					
rain	hospital	throw					
sidewalk	library	tickle					
snow	McDonalds	walk					
star	park	want					
street	school	wash					
sun	store						
tree	zoo						

Please list any other words your child uses here:

_____

_____

_____

Does your child combine two or more words in phrases? (e.g. more cookie, car byebye, etc.) yes_____no_____

Please list below THREE of your child's longest and best sentences or phrases.

_____

_____

_____

This survey instrument was developed by
Leslie Rescorla, Ph.D.

APPENDIX E

DEVELOPMENTAL SENTENCE SCORE:

SCORING CRITERIA

Source: Lee, L. (1974). Developmental sentence analysis. Evanston, IL: Northwestern University Press.

The Developmental Sentence Scoring (DSS) Reweighted Scores

Score	Indefinite Pronouns or Noun Modifiers	Personal Pronouns	Main Verbs	Secondary Verbs
1	it, this, that	1st and 2nd person: *I, me, my, mine, you, your(s)*	A. Uninflected verb: I *see* you. B. copula, is or 's: *It's* red. C. is + verb + ing: He *is coming*	
2		3rd person: *he, him, his, she, her, hers*	A. -s and -ed: *plays, played* B. Irregular past: *ate, saw* C. Copula: *am, are, was, were* D. Auxiliary *am, are, was, were*	Five early-developing infinitives: I wanna *see* (want *to see*) I'm gonna *see* (going *to see*) Lemme [*to*] see (let me [*to*] *see*) Let's [*to*] play (let [*us to*] *play*)
3	A. no, some, more, all, lot(s), one(s), two (etc.), other(s), another B. something, somebody, someone	A. Plural: we, us, our(s), they, them, their B. these, those		Non-complementing infinitives: I stopped *to play*. I'm afraid *to look*. It's hard *to do* that.
4	nothing, nobody, none, no one		A. can, will, may + verb: *may go* B. Obligatory do + verb: *don't go* C. Emphatic do + verb: I *do* see.	Participle, present or past: I see a boy *running*. I found the toy *broken*.
5		Reflexives: myself, yourself, himself, herself, itself, themselves		A. Early infinitival complements with differing subjects in kernels: I want you *to come*. Let him [*to*] *see*. B. Later infinitival complements: I had *to go*. I told him *to go*. I tried *to go*. He ought *to go*. C. Obligatory deletions: Make it [*to*] go. I'd better [*to*] go. D. Infinitive with wh-word: I know what *to get*. I know how *to do* it.
6		A. Wh-pronouns: who, which, whose, whom, what, that, how many, how much I know who came. That's what I said. B. Wh-word + infinitive: I know *what* to do. I know *who(m)* to take	A. could, would, should, might + verb: *might come, could be* B. Obligatory does, did + verb C. Emphatic does, did + verb	
7	A. any, anything, anybody, anyone B. every, everything, everybody, everyone C. both, few, many, each, several, most, least, much, next, first, last, second (etc.)	(his) own, one, oneself, whichever, whoever, whatever Take *whatever* you like.	A. Passive with *get*, any tense Passive with *be*, any tense B. must, shall + verb: *must come* C. have + verb + en: *I've eaten* D. have got: *I've got* it.	Passive infinitival complement: With *get*: I have *to get dressed*. I don't want *to get hurt*. With *be*: I want *to be pulled*. It's going *to be locked*.
8			A. have been + verb + ing had been + verb + ing B. modal + have + verb + en: *may have eaten* C. modal + be + verb + ing: *could be playing* D. Other auxiliary combinations: *should have been sleeping*	Gerund: *Swinging* is fun. I like *fishing*. He started *laughing*.

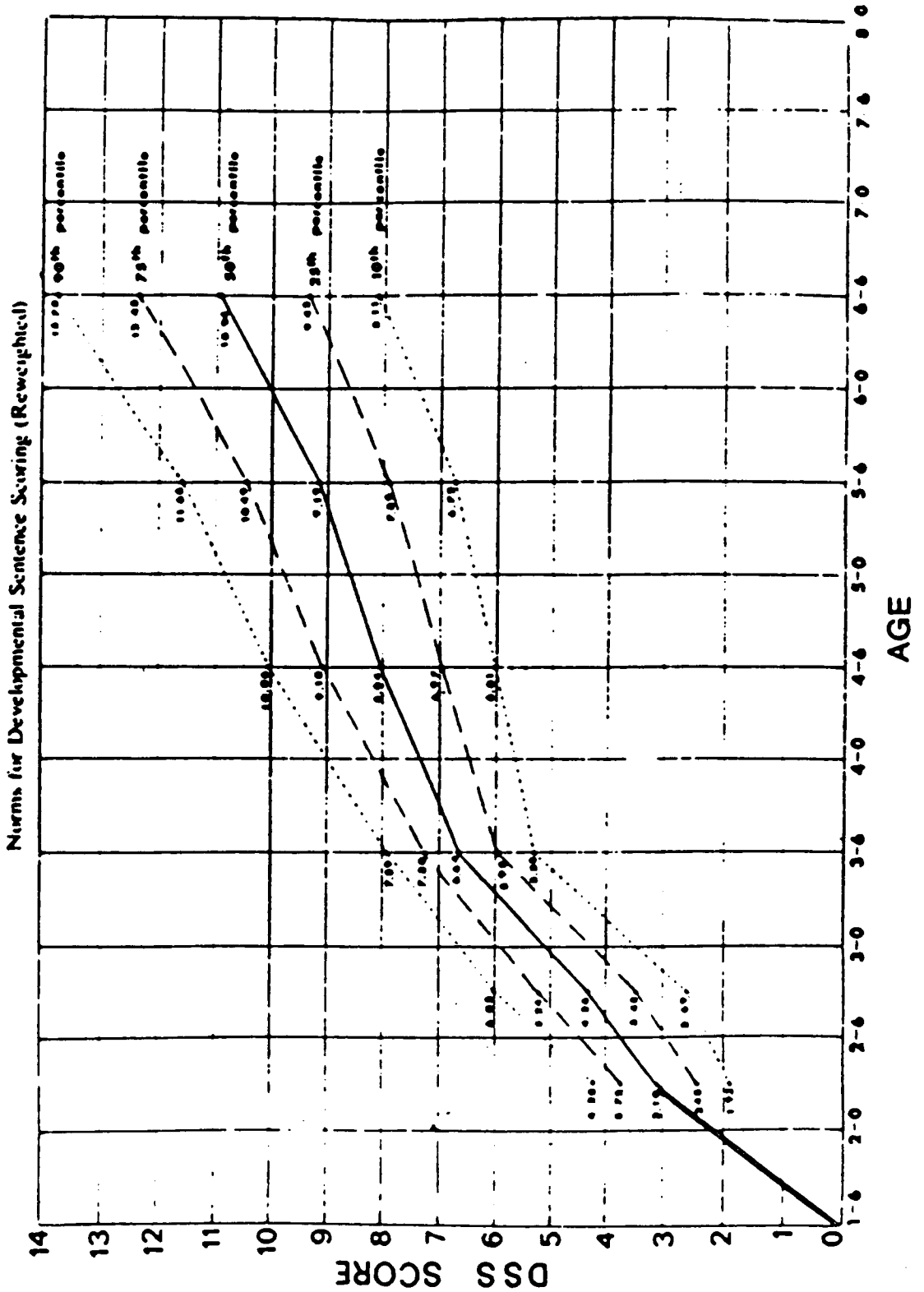
Score	Negatives	Conjunctions	Interrogative Reversals	Wh-Questions
1	it, this that + copula or auxiliary is, 's + not: It's *not* mine. This is *not* a dog. That is *not* moving.		Reversal of copula: *Isn't it* red? *Were they* there?	
2				A. who, what, what + noun: *Who* am I? *What is* he eating? *What* book are you reading? B. where, how many, how much, what . . . do, what . . . for *Where* did it go? *How much* do you want? *What* is he *doing*? *What* is a hammer *for*?
3		and		
4	can't, don't		Reversal of auxiliary be: *Is he* coming? *Isn't he* coming? *Was he* going? *Wasn't he* going	
5	isn't, won't	A. but B. so, and so, so that C. or, if		when, how, how + adjective: *When* shall I come? *How* do you do it? *How big* is it?
6		because	A. Obligatory do, does, did: *Do they* run? *Does it* bite? *Didn't it* hurt? B. Reversal of modal: *Can you* play? *Won't it* hurt? *Shall I* sit down? C. Tag question: It's fun, *isn't it*? It isn't fun, *is it*?	
7	All other negatives: A. Uncontracted negatives: I can *not* go. He has *not* gone. B. Pronoun-auxiliary or pronoun-copula contraction: I'm *not* coming. He's *not* here. C. Auxiliary-negative or copula-negative contraction: He *wasn't* going. He *hasn't* been seen. It *couldn't* be mine. They *aren't* big.			why, what if, how come, how about + gerund *Why* are you crying? *What if* I won't do it? *How come* he is crying? *How about* coming with me?
8		A. where, when, how, while, whether (or not), till, until, unless, since, before, after, for, as, as + adjective + as, as if, like, that, than I know *where* you are. Don't come *till* I call. B. Obligatory deletions: I run faster *than* you [run]. I'm *as big as* a man [is big]. It looks *like* a dog [looks]. C. Elliptical deletions (score 0): That's *why* [I took it]. I know *how* [I can do it]. D. Wh-words + infinitive: I know *how* to do it. I know *where* to go.	A. Reversal of auxiliary have: *Has he* seen you? B. Reversal with two or three auxiliaries: *Has he been* eating? *Couldn't he have* waited? *Could he have been* crying? *Wouldn't he have been* going?	whose, which, which + noun: *Whose* car is that? *Which* book do you want?

APPENDIX F

DEVELOPMENTAL SENTENCE SCORE:

NORMS

Source: Lee, L. (1974). Developmental sentence analysis. Evanston, IL: Northwestern University Press.


Norms for Developmental Sentence Scoring (Reweighted)
DSS SCORE
AGE
90th percentile
75th percentile
50th percentile
25th percentile
10th percentile
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
1-6
2-0
2-6
3-0
3-6
4-0
4-6
5-0
5-6
6-0
6-6
7-0
7-6
8-0

APPENDIX G

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN (TABC): PARENT RATING FORM

Source: Martin, R.P. (1988). The temperament assessment battery for children. Brandon, Vermont: Clinical Psychology.

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN

Parent Form

Child's Name _____ Age (in Months) _____ Date _____

Sex M F (Circle) Ethnicity Caucasian, Black, Hispanic, Oriental, Other _____ (circle one)

Respondent's Name _____ Relation: Father, Mother Other _____ (circle one)

This questionnaire is designed to gather information on the way your child behaves in different situations. Each statement asks you to judge whether that behavior occurs "*hardly ever, infrequently, once in a while, sometimes, often, very often, or almost always.*" Please circle the number "1" if the behavior *hardly ever* occurs, the number "2" if it occurs *infrequently*, etc. Please try to make this judgment to the best of your ability, based on how you think your child *compares to other children about the same age*. Also, please make these judgments based on your child's behavior during the *last 3 months*.

1 hardly ever	2 infrequently	3 once in a while	4 sometimes	5 often	6 very often	7 almost always

1.	My child is shy with adults he/she does not know.	1	2	3	4	5	6	7
2.	When my child starts a project such as a model, puzzle, painting, he/she works at it without stopping until completed, even if it takes a long time.	1	2	3	4	5	6	7
3.	My child can sit quietly through a family meal without fidgeting in his/her chair or getting out of his/her chair.	1	2	3	4	5	6	7
4.	When a new family rule is made for my child, he/she adjusts fairly quickly to it.	1	2	3	4	5	6	7
5.	My child cries and screams so hard he/she gets red in the face and short of breath.	1	2	3	4	5	6	7
6.	If my child is in a bad mood, he/she can easily be joked out of it.	1	2	3	4	5	6	7
7.	When first meeting new children, my child is bashful.	1	2	3	4	5	6	7
8.	When my child is read a story, he/she becomes bored or distracted in a half hour or less.	1	2	3	4	5	6	7
9.	My child is uncomfortable showing off or performing in front of new visitors to the home.	1	2	3	4	5	6	7
10.	My child is at ease within a few visits when visiting at someone else's home.	1	2	3	4	5	6	7
11.	When upset or annoyed with a task, my child whines briefly rather than yelling or crying.	1	2	3	4	5	6	7
12.	If my child wants a toy or candy (while shopping), he/she will easily accept something else offered instead.	1	2	3	4	5	6	7
13.	When my child moves about in the house or outdoors, he/she runs rather than walks.	1	2	3	4	5	6	7
14.	If desired outdoor activity must be postponed due to bad weather, my child stays disappointed for most of the day.	1	2	3	4	5	6	7
15.	My child prefers active games involving running and jumping, etc., rather than games in which he/she must sit.	1	2	3	4	5	6	7
16.	If my child resists some procedure, such as having hair cut, brushed, or washed, he/she will continue to resist it for at least several months.	1	2	3	4	5	6	7
17.	When taken away from an activity my child enjoys, he/she tends to protest strongly, by intense fussing.	1	2	3	4	5	6	7
18.	When my child is promised something in the future, he/she constantly keeps reminding parents.	1	2	3	4	5	6	7
19	When in the park, at a party, or visiting, my child will go up to strange children and join in their play.	1	2	3	4	5	6	7
20	If my child is shy with a strange adult, he/she quickly (within a half hour or so) gets over this.	1	2	3	4	5	6	7
21.	My child sits still to have a story told or read, or a song sung.	1	2	3	4	5	6	7

1 hardly ever	2 infrequently	3 once in a while	4 sometimes	5 often	6 very often	7 almost always

22.	When scolded or reprimanded by parents, my child reacts mildly, such as whining or complaining, rather than strongly, with crying or screaming.	1	2	3	4	5	6	7
23.	When my child becomes angry about something, it is difficult to sidetrack him/her.	1	2	3	4	5	6	7
24.	When learning a new physical activity (such as hopping, skating, bike riding), my child will spend long periods of time practicing.	1	2	3	4	5	6	7
25.	When my child and a playmate are together, the other child gets more upset about things (sharing toys, taking turns, etc.) than my child.	1	2	3	4	5	6	7
26.	When the family takes a trip, my child immediately makes himself/herself at home in the new surroundings.	1	2	3	4	5	6	7
27.	When shopping together and mother does not buy candy, toys, or clothing that child wants, he/she cries and yells.	1	2	3	4	5	6	7
28.	If my child is upset, it is hard to comfort him/her.	1	2	3	4	5	6	7
29.	When the weather is bad and my child is confined to the house, he/she runs around and cannot be entertained by quiet activities.	1	2	3	4	5	6	7
30.	My child is immediately friendly with and approaches unknown adults who visit our home.	1	2	3	4	5	6	7
31.	When in the doctor's office for some uncomfortable procedure, my child is difficult to manage despite reassurance or promises of rewards for good behavior.	1	2	3	4	5	6	7
32.	When a toy or game is difficult, my child will quickly turn to another activity.	1	2	3	4	5	6	7
33.	In a new situation such as a nursery school, my child is still uncomfortable even after a few days.	1	2	3	4	5	6	7
34.	Although my child dislikes some procedures (such as nail cutting or hair brushing), he/she will easily allow it if watching television or being entertained while it is done.	1	2	3	4	5	6	7
35.	My child can sit quietly through an entire children's movie, baseball game, or a long TV program.	1	2	3	4	5	6	7
36.	When my child objects to wearing certain clothing, he/she argues loudly, yells, cries.	1	2	3	4	5	6	7
37.	My child tends to give up when faced with a puzzle or a block structure that is difficult.	1	2	3	4	5	6	7
38.	When there is a change in daily routine, such as not being able to go to school, change of usual daily activities, etc., my child easily goes along with the new routine.	1	2	3	4	5	6	7
39.	When sitting, my child swings his/her legs, fidgets, or generally has his/her hands in constant motion.	1	2	3	4	5	6	7
40.	The first time my child is left in a new situation without mother (such as school, nursery), he/she gets upset.	1	2	3	4	5	6	7
41.	If my child starts to play with something and I want him/her to stop, it is hard to turn his/her attention to something else.	1	2	3	4	5	6	7
42.	My child gets involved in quiet activities such as crafts, watching television, reading, or looking at picture books.	1	2	3	4	5	6	7
43.	My child feels free to smile and laugh when around people for the first time.	1	2	3	4	5	6	7
44.	When away from home (for example, on vacation), my child has difficulty in adjusting to routines and schedules that are different from those at home.	1	2	3	4	5	6	7
45.	My child seems to take things matter-of-factly, accepts events in stride without getting very excited.	1	2	3	4	5	6	7
46.	When playing with a friend, my child gets bored with one activity sooner than the other child.	1	2	3	4	5	6	7
47.	My child can be stopped from pestering if he/she is given something else to do.	1	2	3	4	5	6	7
48.	My child can be happy for a car ride of an hour or more if he/she has a favorite toy or game to play with.	1	2	3	4	5	6	7

Thank You

APPENDIX H

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN (TABC): PARENT SCORING SHEET

Source: Martin, R.P. (1988). The temperament assessment battery for children. Brandon, Vermont: Clinical Psychology.

Temperament Scoring Sheet
Parent Form

Child's Name _____ Age (in Months) _____ Date _____

Sex M F (Circle) Ethnicity Caucasian, Black, Hispanic, Oriental, Other _____ (circle one)

Respondent's Name _____ Relation: Father, Mother Other _____ (circle one)

Temperament Scale	Item								Sum	Prorated Sum	T Score	Verbal Labels
Activity	3 (R)	13	15	21 (R)	29	35 (R)	39	42 (R)				
Adaptability	4	10	14 (R)	16 (R)	20	33 (R)	38	44 (R)				
Approach/ Withdrawal	1 (R)	7 (R)	9 (R)	19	26	30	40 (R)	43				
Emotional Intensity	5	11 (R)	17	22 (R)	25 (R)	27	36	45 (R)				
Ease-of-Management-Through-Distraction (EMTD)	6	12	23 (R)	28 (R)	31 (R)	34	41 (R)	47				
Persistence	2	8 (R)	18	24	32 (R)	37 (R)	46 (R)	48				

APPENDIX I

TEMPERAMENT ASSESSMENT FOR CHILDREN (TABC):

CLINICIAN RATING FORM/SCORING SHEET

Source: Martin, R.P. (1988). The temperament assessment battery for children. Brandon, Vermont: Clinical Psychology.

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN

Clinician Form

Child's Name _____ Age (in Months) _____ Date _____

Sex M F (Circle) Ethnicity Caucasian, Black, Hispanic, Oriental, Other _____ (circle one)

Examiner's Name _____

Summary of Results

Scale	Sum	Prorated Sum	T Score	Verbal Label
Activity	____	_____	____	_____
Adaptability	____	_____	____	_____
Approach/Withdrawal	____	_____	____	_____
Distractibility	____	_____	____	_____
Persistence	____	_____	____	_____

Activity

		Rarely ever			Sometimes			Almost always
1.	The child's movements were slow.	1	2	3	4	5	6	7
2.	The child got out of his/her seat and moved around the examining room between tasks (or attempted to).	1	2	3	4	5	6	7
3.	While seated the child engaged in small motor activity extraneous to tasks (drummed fingers, swung legs, manipulated table).	1	2	3	4	5	6	7
4.	Child was restless.	1	2	3	4	5	6	7

Scoring

(a) Reverse scoring of Item 1 (7 = 1, 6 = 2, etc.)

____	____	____	____
1R	2	3	4

(b) Calculate sum

Total = _____

Adaptability

		Definitely no			Somewhat			Definitely yes
1.	The child quickly adjusted to the examiner and the testing situation.	1	2	3	4	5	6	7

		Rarely ever			Sometimes			Almost always
2.	Child had difficulty in transition from one task to the next.	1	2	3	4	5	6	7
3.	When clinician attempted to direct child's inappropriate behavior by establishing rules for the session (let's stay in our seat), child was quick to adjust to new rule.	1	2	3	4	5	6	7
4.	The child quickly began to display postural behavior appropriate for an examinee of his/her age (e.g., sat in seat, oriented body toward materials, etc.)	1	2	3	4	5	6	7
5.	The child appeared anxious and tense during the examination.	1	2	3	4	5	6	7

Scoring

(a) Reverse scoring of items 2 and 5 (7 = 1, 6 = 2, etc.)

___	___	___	___	___
1	2R	3	4	5R

(b) Calculate sum

Total = _____

Approach/Withdrawal

		Hardly ever			Sometimes			Almost always
1.	Child was shy in presence of clinician.	1	2	3	4	5	6	7
2.	Child was initially hesitant to attempt new tasks.	1	2	3	4	5	6	7
3.	Child readily performed for clinician, sometimes "showing off." Seemed to enjoy demonstrating skills.	1	2	3	4	5	6	7
4.	Child initiated conversations with clinician.	1	2	3	4	5	6	7
5.	Child seemed relaxed and comfortable with clinician.	1	2	3	4	5	6	7

Scoring

(a) Reverse scoring of items 1 and 2 (7 = 1, 6 = 2, etc.)

___	___	___	___	___
1R	2R	3	4	5

(b) Calculate sum

Total = _____

Distractibility

		Hardly ever			Sometimes			Almost always
1.	Child's attention to tasks was easily sidetracked.	1	2	3	4	5	6	7
2.	When engaged in a task or conversation, noises outside room, parents' comments or movement interrupted the child's behavior.	1	2	3	4	5	6	7
3.	The child appeared to be daydreaming (e.g., asked to have items repeated; didn't seem to be listening to directions).	1	2	3	4	5	6	7
4.	Room temperature, itchy or tight clothing, uncomfortable seat, colors distracted child from task.	1	2	3	4	5	6	7
5.	Child attended to test materials other than those being used.	1	2	3	4	5	6	7

Scoring

(a) Calculate sum

1	2	3	4	5

Total = _____

Persistence

		Hardly ever			Sometimes			Almost always
1.	When child did not finish timed tasks, the child wanted to continue and finish task.	1	2	3	4	5	6	7
2.	The child quickly responded with a wrong answer or "I don't know."	1	2	3	4	5	6	7
3.	The child attempted to terminate the testing session, or parts of the session, by saying, "Can we do something else?" "Can I go home?" etc.	1	2	3	4	5	6	7
4.	Child gave up on activities he/she thought were too difficult.	1	2	3	4	5	6	7
		Definitely no			Somewhat			Definitely yes
5.	The child's ability to remain attentive through the examination appeared to be age appropriate.	1	2	3	4	5	6	7

Scoring

(a) Reverse scoring of items 2, 3, and 4 (7 = 1, 6 = 2, etc.)

1	2R	3R	4R	5

(b) Calculate sum

Total = _____

APPENDIX J

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN (TABC)

RAW SCORES

RAW SCORES FROM TABC
NORMAL LANGUAGE (NL) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Emot	EMTD	Pers
4	30	48	51	33	41	43
9	40	47	54	26	42	38
14	29	54	47	16	51	48
27	24	47	55	26	39	45
40	21	52	40	19	51	40
50	36	36	22	22	34	33
56	22	43	26	25	29	44
58	30	42	34	30	39	39
59	22	51	39	17	36	41
72	37	36	32	27	35	33
81	36	43	42	27	43	43
95	28	38	30	23	30	39
113	25	47	32	13	49	42
126	14	50	36	11	55	48
128	20	48	48	20	37	43
129	14	43	38	23	44	43
130	25	51	42	24	45	37
131	23	50	43	19	38	50
132	21	46	39	24	44	49
139	21	40	23	18	39	39
141	23	45	44	23	38	43
144	30	41	39	32	31	39
150	32	50	47	26	37	36

RAW SCORES FROM TABC
HISTORY OF EXPRESSIVE LANGUAGE DELAY (HELD) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Emot	EMTD	Pers
6	36	42	25	25	46	29
7	29	47	47	25	30	45
12	24	49	42	23	40	46
19	36	39	14	28	33	37
39	23	42	30	25	41	40
41	26	53	47	12	47	44
57	26	36	26	24	35	36
84	18	40	33	14	50	39
86	21	54	51	21	40	37
87	24	35	39	35	30	38
92	27	45	25	24	42	40
97	23	51	39	22	42	38
98	18	47	32	33	37	50
101	18	50	33	16	44	45
102	40	44	43	23	43	37
105	19	41	32	30	41	45
107	18	51	38	14	48	37
109	32	33	34	38	29	38
114	19	53	41	21	45	34
119	35	49	40	24	34	36
122	24	45	22	28	41	44
142	22	50	37	24	53	42

RAW SCORES FROM TABC
EXPRESSIVE LANGUAGE DELAY (ELD) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Emot	EMTD	Pers
15	12	41	39	18	44	34
29	34	42	38	31	33	31
93	17	53	44	20	46	45
94	29	46	24	15	42	35
100	23	40	27	26	34	42
111	40	28	14	27	22	34

RAW SCORES FROM TABC
NORMAL LANGUAGE (NL) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
4	13	28	27	13	24
9	24	15	22	28	16
14	10	30	23	10	28
27	27	24	34	18	23
40	13	24	20	13	23
50	10	29	26	10	28
56	10	29	23	11	27
58	10	29	25	11	28
59	9	30	27	11	28
72	12	25	17	14	24
81	22	26	30	17	25
95	16	28	23	19	19
113	11	30	26	10	28
126	9	32	29	6	25
128	14	29	29	5	34
129	18	21	26	18	23
130	12	30	27	12	29
131	17	29	23	11	30
132	16	26	27	20	23
139	15	30	24	10	31
141	15	30	27	11	28
144	13	29	27	20	21
150	20	24	27	20	23

RAW SCORES FROM TABC
HISTORY OF EXPRESSIVE LANGUAGE DELAY (HELD) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
6	16	22	25	18	23
7	18	16	26	17	21
12	16	28	21	13	26
19	12	24	12	12	26
39	24	15	21	25	20
41	12	31	27	14	30
57	10	27	21	12	26
84	9	29	20	10	28
86	25	26	27	26	25
87	24	18	22	25	20
92	10	30	26	10	30
97	15	17	17	22	16
98	7	34	21	5	34
101	17	26	25	25	25
102	23	15	25	23	16
105	9	27	24	14	31
107	11	28	22	11	29
109	16	24	22	16	21
114	13	26	25	16	25
119	9	29	25	13	26
122	12	30	24	11	27
142	12	28	16	10	29

RAW SCORES FROM TABC
EXPRESSIVE LANGUAGE DELAY (ELD) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
15	15	30	31	13	21
29	16	29	26	15	26
93	17	27	21	12	25
94	8	30	19	10	29
100	10	30	21	12	29
111	17	25	22	15	25

APPENDIX K

TEMPERAMENT ASSESSMENT BATTERY FOR CHILDREN (TABC)

T-SCORES

T-SCORES FROM TABC
NORMAL LANGUAGE (NL) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject	Act	Adap	Appr/With	Emot	EMTD	Pers
4	55	51	64	66	45	55
9	70	50	69	55	47	47
14	54	61	60	39	61	63
27	47	50	69	55	42	58
40	43	58	52	44	61	50
50	64	32	32	49	34	39
56	45	44	37	53	25	56
58	55	51	46	61	42	49
59	45	56	51	40	37	51
72	65	32	43	56	35	39
81	64	44	54	56	49	55
95	53	35	41	50	27	49
113	49	50	43	34	58	53
126	33	55	48	30	68	63
128	42	51	61	45	39	55
129	33	44	50	50	50	55
130	49	56	54	51	51	45
131	46	55	56	44	40	66
132	43	49	51	51	50	65
139	43	39	33	42	42	49
141	46	47	57	50	40	49
144	55	40	51	65	29	49
150	58	55	60	55	39	44

T-SCORES FROM TABC
HISTORY OF EXPRESSIVE LANGUAGE DELAY (HELD) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Emot	EMTD	Pers
6	64	42	36	53	53	32
7	54	50	60	53	27	58
12	47	53	54	50	44	60
19	64	37	20	58	32	45
39	46	42	41	53	45	50
41	50	60	60	32	55	56
57	50	32	37	51	35	44
84	39	39	44	35	60	49
86	43	61	64	47	44	45
87	47	30	51	70	27	47
92	51	45	36	51	47	50
97	46	56	51	49	47	47
98	39	50	43	66	39	66
101	39	55	44	39	50	58
102	70	45	56	50	49	45
105	39	40	43	61	45	58
107	39	56	50	35	56	45
109	58	27	44	74	25	47
114	40	60	53	47	51	40
119	63	53	52	51	34	44
122	47	47	32	58	45	56
142	45	55	37	51	65	53

T-SCORES FROM TABC
EXPRESSIVE LANGUAGE DELAY (ELD) SUBJECTS
Parent Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Emot	EMTD	Pers
15	45	40	51	42	50	40
29	61	42	50	63	32	35
93	37	60	57	45	53	58
94	54	49	34	37	47	42
100	46	39	38	55	34	53
111	70	20	20	56	20	40

T-SCORES FROM TABC
NORMAL LANGUAGE (NL) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
4	47	51	53	50	52
9	65	30	46	75	43
14	42	55	47	45	57
27	70	45	63	58	51
40	47	45	43	50	51
50	42	53	51	45	57
56	42	53	47	47	56
58	42	53	50	47	57
59	40	55	53	47	57
72	45	47	39	51	52
81	61	49	57	56	54
95	51	51	47	60	46
113	44	55	51	45	57
126	40	58	55	39	54
128	49	53	55	37	65
129	55	40	51	58	51
130	45	55	53	49	59
131	53	53	47	47	60
132	51	49	53	61	51
139	50	55	49	45	61
141	50	55	53	47	57
144	47	53	53	61	49
150	58	45	53	61	51

T-SCORES FROM TABC
HISTORY OF EXPRESSIVE LANGUAGE DELAY (HELD) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
6	51	42	50	58	51
7	55	32	51	56	49
12	51	51	45	50	49
19	45	45	32	49	55
39	65	30	45	70	48
41	45	56	53	51	60
57	42	50	45	49	55
84	40	53	43	45	57
86	66	49	53	71	54
87	65	35	46	70	43
92	42	55	51	45	60
97	50	34	39	65	43
98	37	61	45	34	65
101	53	49	50	70	54
102	63	30	50	66	43
105	40	50	49	51	61
107	44	51	46	47	59
109	51	45	46	55	55
114	47	49	50	55	54
119	40	53	50	50	55
122	45	55	49	47	56
142	45	51	37	45	59

T-SCORES FROM TABC
EXPRESSIVE LANGUAGE DELAY (ELD) SUBJECTS
Clinician Forms

TEMPERAMENT VARIABLES

Subject#	Act	Adap	Appr/With	Dist	Pers
15	50	55	58	50	49
29	51	53	51	53	55
93	53	50	45	49	54
94	39	55	42	45	59
100	42	55	45	49	59
111	53	47	46	53	54